A STUDY ON ACUTE LARGE BOWEL OBSTRUCTION

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BRANCH - I DEGREE EXAMINATION

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Certificate

This is to certify that the dissertation entitled "**A STUDY ON ACUTE LARGE BOWEL OBSTRUCTION**" presented here is the original work done by **Dr. K. RAMESH,** post-graduate at Madras Medical College, Govt. General Hospital, Chennai-3 in partial fulfillment of the University rules and regulations for award of ***M.S., Degree Branch-I (General Surgery)*** under my guidance and supervision during the academic period from 2003-2006.

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DECLARATION

I hereby declare that the dissertation entitled *"***A STUDY ON ACUTE LARGE BOWEL OBSTRUCTION***"* was done by me at Government General Hospital, Madras Medical College, Chennai-3 during the period of my post graduate study for M.S. Degree Branch-I (General Surgery) from 2003 to 2006.

This dissertation is submitted to the Tamil Nadu Dr. M.G.R. Medical University in partial fulfillment of the University regulations for award of M.S., Degree in General Surgery.

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CONTENTS

INTRODUCTION

Acute obstruction of the large bowel is an important cause of the acute abdomen in any emergency.

Large bowel obstruction accounts for 6.3% of all intestinal obstruction (Maingot 10th ed). Although the obstruction may be the result of mechanical, inflammatory or neoplastic process, diagnosis often is made and treatment initiated on clinical findings with limited radiographic or other information.

In many ways the wisdom of adage “Never let the sun rise or set on an intestinal obstruction” remains a pure practical guideline. Whenever any uncertainty exists, surgical options are dictated by the nature of disease, patient’s status and experience of the operating surgeon. Improvements in the fields of anesthesiology, knowledge of fluid and electrolyte balance and availability of broad-spectrum antibiotics have greatly complemented the outcome of the surgical procedures.

AIM OF THE STUDY

1. To study the epidemiology, aetiology, pattern of intestinal obstruction and various operative procedures.
2. To determine the incidence of malignant and non-malignant causes producing obstruction.
3. To compare the variables like age distribution, sex incidence and complications.
4. To determine the outcome of surgery.
5. To review the literature in the subject.

REVIEW OF LITERATURE

Large intestine extends from the end of ileum to the anus and is comprised of caecum, appendix, colon, rectum, and anal canal. It is 135cm in length with maximum dilatation of 7.5cm at caecum. It is made up of circular muscle layer that is continuous and longitudinal layer arranged in three bands, the taenia coli as far as the rectum where they fuse to form a continuous layer. The voluminous large bowel is gathered by taenia coli to give the characteristic sacculated appearance.

Large intestine comprises of the following:

Caecum is a blind sac at the commencement of large intestine. It measures 6cm long 7.5cm broad and situated in Right Iliac Fossa.

Ascending colon is 15cm long and fixed posteriorly.

Hepatic flexure lies between Ascending colon and Transverse Colon.

Transverse colon is about 45-50cm long with its mesentery (i.e.) transverse mesocolon.

Splenic flexure is fixed by phrenicocolic ligament that contains blood vessels, which need to be ligated during mobilization of this part.

Descending colon is about 20cm long and fixed posteriorly.

SIGMOID COLON:

This forms a loop of 20-60cm in length with its own mesentery. This has an omega (ω) shaped attachment to the posterior wall. It extends from descending colon at the pelvic brim to commencement of rectum at S3 level.

The taenia coli of sigmoid are wider than in other parts of colon and have well developed appendices epiploicae. It lies in the pelvic cavity coiled in front of rectum lying on the peritoneal surface of bladder. It partially fuses with parietal peritoneum along an inverted 'V' shaped base. The linings of the inverted 'V' diverge from the bifurcation of the common iliac artery over the sacro - iliac joint at the pelvic brim. Base of the sigmoid mesocolon thus measures around 10cm and its intestinal border 30-40cm.

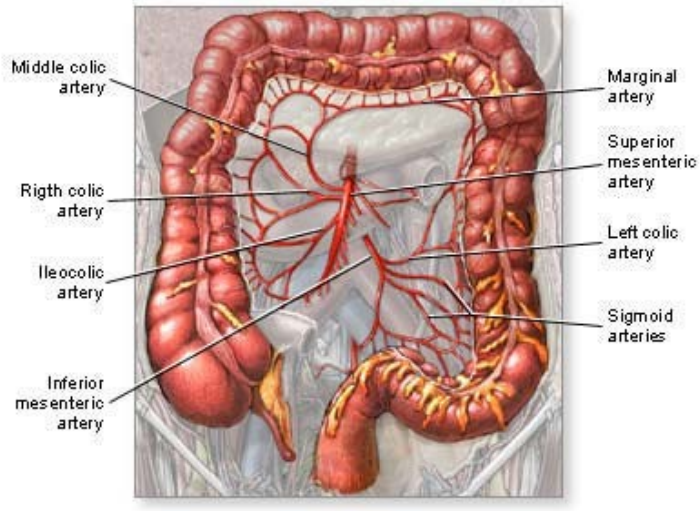
RECTUM:

It proceeds downwards & forwards closely applied to the concavity of sacrum and coccyx, measuring around 12-15cm. It ends 2-3cm in front and below the tip of the coccyx by turning abruptly backwards and downwards through the levator ani to form the anal canal. It is devoid of taenie coli, appendices epiploicae, haustrations and sacculations.

ANAL CANAL:

It is the terminal portion of large intestine measuring about 3.8cm and develops partly from endoderm (dorsal division of cloaca) and partly from ectoderm (proctodeum).

ARTERIAL SUPPLY TO LARGE BOWEL



Mainly through,

1. Superior Mesenteric Artery
2. Inferior Mesenteric Artery
3. Branches of internal iliac

   Middle Rectal Artery

   Inferior Rectal Artery

1. SUPERIOR MESENTERIC ARTERY:

Direct branch of aorta at the level of L1 gives 3 colic arteries apart from a number of jejunal and ileal branches.

The 3 colic arteries are:

- Ileo colic
- Right colic
- Middle colic
  - Left branch
  - Right branch

Left branch take part in the (arch of Riolan) meandering artery, an important collateral channel anastomosing with Inferior Mesenteric Artery.

2. INFERIOR MESENTERIC ARTERY:

Arises from aorta at the L3 level and supplies the colon from splenic flexure to the rectum.

It gives off

- Left colic artery
- Sigmoidal arteries (3-4 in number)
- Superior rectal Artery

Marginal Artery of Drummond: It is a paracolic vessel of anastomosis between colic arteries from which the terminal arteries to the colon (vasa recta) arises.

This vessel extending from ascending colon to the pelvic colon lies about 2.5-3.8cm from the bowel wall. This artery is less consistent at the splenic flexure and lower sigmoid, at critical segments called Griffith's point and Sudek's point respectively.

VASA RECTA:

They are the terminal arteries to the colon. They arise from the marginal artery and penetrate the bowel wall. The long vasa recta encircle the bowel wall and anastomose with each other on the anti mesocolic border of the bowel. The short vasa recta supply the mesocolic half of bowel circumference.

RECTAL ANASTOMOSIS:

There is abundant and constant anastomosis between the superior and middle rectal Artery, a branch of internal iliac artery. This is responsible for the blood supply of terminal colon after ligature of Inferior Mesenteric Artery. However most part of rectum and anal canal are supplied by inferior rectal Artery, a branch of internal pudendal Artery.

VENOUS DRAINAGE:

Corresponds to that of arteries. Veins from the right side of colon flow into Superior Mesenteric Vein, which drains the midgut. This lies to the right of the artery and joins the splenic Vein to form the portal vein. Veins from the left side of colon flow into the Inferior Mesenteric Vein, which drains the gut and is the continuation of the

superior rectal vein. It continues vertically anterior to left renal vein to the left of duodeno jejunal flexure and joins the splenic vein. The Inferior Mesenteric Vein can sometimes drain into Superior mesenteric vein.

LYMPHATIC DRAINAGE:

Lymphatic of large intestine accompany the vascular pedicle ultimately draining into four tiers of lymph nodes.

- Epicolic lymph nodes – along side of colonic wall.
- Paracoloic lymph nodes – along the marginal vessel.
- Intermediate group of lymph nodes – along the larger branches of arteries supplying the colon.

Principal nodes situated along the superior & inferior mesenteric trunks. They then pass through efferent lymph vessels to the coeliac group of nodes & ultimately into the cysterna chyli.

INNERVATION:

The colon is innervated by both the sympathetic (T_{11} T_{12} L_1 L_2) and para sympathetic (right vagus, S_2, S_3, S_4) system. Sympathetic nerves have an inhibitory effect on colonic peristalsis and secretion while parasympathetic nerves are secretomotor and inhibit the sphincteric musculature.

Colonic pain may be referred to a site distant to the organic insult.

Caecum: Mc burney's point extending to epigastrium.

Ascending colon: Right upper quadrant

Hepatic flexure: Right upper quadrant.

Descending colon: Midline and to the left.

Recto Sigmoid: Suprapubic and coccygeal areas.

PATHOPHYSIOLOGY OF LARGE BOWEL OBSTRUCTION

Intestinal obstruction can be classified into:

a. Dynamic Obstruction:

Dynamic Obstruction is more commonly encountered in surgical practice. Here peristalsis is present against the obstructing agent, which may be In the lumen: e.g.: Inspissated faecal material.

In the wall: e.g.: Malignant stricture.

Outside the wall: e.g.: Adhesions, volvulus.

b. Adynamic Obstruction:

Here peristalsis ceases and no true propulsive waves occur.

E.g.: Paralytic ileus, mesenteric vascular occlusion.

Causes of Mechanical Large Bowel Obstruction in the Adult

WITHIN THE LUMEN	WITHIN THE WALL	OUTSIDE THE WALL
Faecal impaction Inspissated barium Gallstone Foreign body	Tumors especially carcinoma Inflammation o Diverticulitis o Crohn's disease o Tuberculosis o Lymphogranuloma venereum o Schistosomiasis Congenital causes o Adult hirschsprung's disease Ischaemia	Bands and adhesions External hernias Internal hernias Tumors in adjacent organs or lymph nodes Abscesses Volvulus

	Radiation Miscellaneous o Anastomotic stricture o Intussusception.	

ACUTE OBSTRUCTION:

Usually seen in small bowel with immediate central severe colicky pain, early vomiting, central abdomen distension and constipation.

CHRONIC OBSTRUCTION:

This is mainly seen in large bowel with abdomen distension colicky pain, progressive constipation and later with absolute constipation.

ACUTE ON CHRONIC OBSTRUCTION:

Spreads from large bowel to involve small bowel and give rise to pain and constipation of a variable time scale followed by abdominal distension and vomiting.

EVENTS IN OBSTRUCTION:

Initially due to the stretch reflex, increased peristalsis occurs in the proximal intestine until it ceases and the obstructed intestine

become flaccid and paralysed. The cessation has a protective effect in preventing vascular damage due to increasing intraluminal pressure, unless the obstruction is of closed loop type where ischaemic necrosis of bowel wall ensues if treatment is delayed.

Distension occurs proximal to obstruction due to:

1. Gas:

Swallowed air – 68%

Diffusion from bowel lumen – 22%

Products of digestion & bacterial activity – 10%

Oxygen & Carbon dioxide get absorbed and resultant mixture is made up of

Nitrogen – 90%

Hydrogen Sulphide – 8%

Other gases – 2%

2. Fluid:

This is made up of whatever fluid this patient has ingested before surgery as well as various digestive juices.

About 8000ml is secreted in 24 hrs.

Above pylorus: 2500ml

Saliva: 1000ml

Gastric juices: 1500ml

Below pylorus: 4000ml

Bile & pancreatic juice: 2000ml

Succus entericus: 2000ml

In obstruction, absorption of water & electrolytes from gut is retarded but secretion of digestive juices into the lumen persists or is even increased.

Negative balance of fluid & electrolytes in obstruction is due to:

1. Diminished intake by mouth.
2. Defective intestinal absorption.
3. Losses due to vomiting.

4. Sequestration into bowel lumen.

EFFECT OF BOWEL DISTENSION:

As a result of distension, the diaphragm is pushed up into the chest and moves inadequately. Ventilation becomes shallow, and compression of lung bases may cause right to left shunt. Oxygen tension is reduced. Hypoxia and possibly hypercarbia and acidosis from under-ventilation contribute to multiple organ failure.

EFFECT OF OBSTRUCTION ON GUT FLORA:

Normal faecal flora swims in symbiosis with the human host and support several physiological process.

E.g.: Degradation of bile pigments.

Degradation of several toxic products.

Vitamin-K production.

Alteration of colonic motility & absorption.

Normally 99% of faecal flora is anaerobic of which bacteroides is the most abundant along with Lactobacillus bifidus, Clostridium of various types & anaerobic cocci.

Aerobes are mainly Escherichia coli present in counts of $10^n(n=7)$/ gm-wet faeces. Streptococcus faecalis is the principal enterococcus.

Unrelieved obstruction results in mucosal ischaemia especially when there is strangulation and gangrene. This results in transmigration of bacteria from lumen to systemic circulation as well as absorption of potentially lethal metabolic products of bacteria leading to severe systemic inflammatory response syndrome (SIRS) and multi system organ failure (MSOF).

STRANGULATING OBSTRUCTION:

In addition to the changes in the simple obstruction, viability of bowel is threatened due to impairment of blood supply either by internal compression or by interruption of mesenteric blood flow or by rising intraluminal pressure as in closed loop obstruction.

In all these, except mesenteric artery thrombosis, venous return is affected before arterial supply leading to increased capillary pressure. This causes escape of intravascular fluid and diapedesis of RBC’s into the bowel wall, lumen and peritoneal cavity leading to haemorrhagic infarction and loss of blood volume propotional to the

length of the bowel affected. In addition, there is transmigration of bacteria and its products leading to endotoxemia.

COLONIC PSEUDO OBSTRUCTION:

There is controversy over whether the disease is due to primary abnormalities of intramural nerve plexus or intestinal smooth muscle.

The aetiology may be:

1. Idiopathic – Diabetes Mellitus, Hypokalemia, Uraemia, Myxoedema.
2. Severe trauma / shock.
3. Retro Peritoneal irritation – Blood, Tumour
4. Drugs, Tricyclic antidepressants, Phenothiazines, L-dopa.

DIAGNOSIS OF LARGE BOWEL OBSTRUCTION:

Diagnosis of Large Bowel Obstruction is commonly based on history and physical examination.

Essentially all patients with non perforating colonic obstruction will develop – Abdominal pain

Constipation

Distension

Colicky pain is due to increased wall tension in the distended obstructed colon, while progressive continuous pain is suggestive of strangulation and gangrene. Distension is the main feature in volvulus but pain and other features eventually become apparent. Fever is more common if there is diverticulitis or perforation secondary to obstruction or when there is ischaemic gangrene. Blood in the stool is more common in inflammatory bowel disease and sometimes in obstructive colonic carcinoma. Large bowel ischaemia can also present with bleeding PR.

CLINICAL PRESENTATIONS OF COMMON CAUSES OF LARGE BOWEL OBSTRUCTION INCLUDES

	Cancer	*Volvulus*
Pain	81-85	67-100
Nausea/ Vomiting	65	50-87
Constipation	35	43-66
Obstipation	47	XX
Diarrhoea	XX	24
Distension	69-80	80-100
Tenderness	44	70
Fever	Rare	11
Peritonitis	30	10-19

SIGMOID VOLVULUS:

'Volvulus' is defined as the twisting of a hollow viscus either around an axis passing longitudinally to it (organo - axial) or passing through its mesentery at right angles to the first (mesenterio - axial). In the case of sigmoid colon, a portion of the large intestine whose proximal and distal ends (descending colon and rectum respectively) are plastered to the parietes close to each other, allowing it to hang out like a large loop, twisting occurs only along the mesentery. The twist compresses the mesentery, which carries the vasculature to the organ and hence compromises the same leading to strangulation and gangrene.

Laurell (1926) defined volvulus for the first time. Studies in the 20th century by Obalansky (1984), Gibson and Ballantyne (1982) showed the distribution of this condition predominantly in the non-English speaking countries.

AGE AND SEX:

In Africa, India, Iran and Brazil and Eastern Europe about 70-90% of cases are seen in the middle ages (40-60) whereas in the USA, UK, Australia and Israel, it afflicts the older age group of 60-70 years.

There is a marked overall preponderance of male patients comprising approximately 90% of reported patients (Ballantyne 1982). The consumption of high fibre diet by the male produces bulky stools and flatus and their irregular bowel habits produce over- loading of the colon and possibly leading to volvulus.

PATHOGENESIS:

The different theories of pathogenesis include:

1. Cullen's theory of spasmodic constriction.

2. Theory of inversion of peristalsis by Good in 1829.

3. Long and Loose mesentery as a predisposing factor by Von Rokitansky in 1949.

4. Kuttner' s theory of long, redundant colon resulting from coarse vegetable fibre diet consumption; this is the commonly accepted view by various authors such as Anderson (1968), Sinha (1969) and Riedl (1978).

Neurological diseases such as Parkinson's disease have been associated in the evolvement of sigmoid volvulus probably by way of contributing to their being bedridden and thus contributing to chronic constipation in these institutionalized patients (Dean 1952).

Sigmoid volvulus is said to be the most common cause of intestinal obstruction in pregnant women. Harper (quoted by Ballantyne 1982) speculated that the enlarging uterus might cause kinking in the colon, where it is fixed to the pelvic walls. The ensuring proximal distension raises a redundant or abnormally mobile sigmoid out of the pelvis. This can produce torsion at the point of fixation.

PREDISPOSING FACTORS:

1. Narrow attachment of the mesocolon.

2. Long pelvic mesocolon.

3. Overloaded colon thereby providing the torting force to the limbs of the bowel. Hence, the dietary and bowel habits of the person play a major role in its causation.

4. Adhesions act as organic axis around which the volvulus takes place.

CLINICAL DIAGNOSIS:

The triad of abdominal pain, distension and constipation are the predominant signs and symptoms of sigmoid volvulus. The duration of symptoms will be characteristically short (Bolt 1956). Its characteristic presentation in the old male as an acute large bowel obstruction with

1. Distended flanks.
2. Sometimes visible large bowel loops.
3. Empty and ballooned rectum on per rectal examination.
4. The characteristic “Frimann – Dahl” signs on X-ray make the diagnosis unmistakable.

Clinical features that suggest the presence of gangrene include severe pain, deterioration in the general condition of the patients with tachycardia and hypotension and marked abdominal tenderness with absent intestinal sounds.

The characteristic radiological features include:

1. **‘Inverted U sign’**: Inverted ‘U’ shaped loop massively distended and devoid of haustra.
2. **‘Liver overlap sign’**: Haustral margin overlapping the lower border of the liver shadow.
3. **‘Left flank overlap sign’**: Haustral margin overlaps the dilated descending colon.

4. **‘Frimann – Dahl sign’**: the two limbs of the loops converge interiorly giving rise to three white lines, representing the outer walls and the two adjacent inner wall of volvulus. It is usually on the left side of the pelvis.

5. Usually a huge amount of air accumulates in the loop giving an air fluid ratio greater than 2:1.

TREATMENT:

The initial management of the patient involves the treatment of shock with intravenous fluids supported by parenteral antibiotics while the patient being put on nil oral and insertion of a nasogastric tube.

The presence or absence of the gangrenous bowel is an important factor in the management.

Flexible colonoscopy has been successfully employed in the non-operative reduction of volvulus with viable bowel (Ghazi 1976, Arigabu 1985).

No controversy exists in the management of sigmoid volvulus with gangrenous bowel and surgery is the treatment. However, controversy exists in cases with viable bowel regarding the choice of non-operative or operative treatment. The non-operative reduction is

only a temporary procedure as the recurrence has been reported to be 33-100% (Botsford et al 1967,Hines et al 1967). Therefore elective resection of the sigmoid loop should be done preferably during the same hospital admission.

PRIMARY RESECTION AND ANASTOMOSIS:

In the presence of viable gut, primary resection of the redundant sigmoid loop with end-to-end anastomosis with proximal colostomy is an effective procedure.

Gurel advocated primary resection and anastomosis in the management of viable sigmoid volvulus together with “on table” lavage technique. This technique of intra operative ante-grade irrigation of the colon allows the large bowel to be prepared intra operatively to be followed by primary resection and anastomosis, and in rare cases with protective colostomy.

Resection and anastomosis in an emergency setting without the bowel preparation has been done by recent surgeons without additional mortality (Kuzu 2002, Raveentharan 2003).

PROCEDURES FOR GANGRENOUS SIGMOID COLON:

The presence of gangrenous bowel demands emergency laparotomy and resection of gangrenous loop. The following options are available, depending upon the patient's age, extent of peritonitis and shock.

Hartmann's procedure involves a resection of the gangrenous loop with proximal colostomy and closure of the distal stump.

The advantage is it can be done in patients with extensive peritonitis in whom primary anastomosis is at risk.

The disadvantage is second stage closure of colostomy is required which is difficult due to dense adhesions between the rectal stump and bowel loops.

Thus Hartmann's procedure should be reserved for cases with extensive gangrene where distal stump cannot be brought out.

Primary resection and anastomosis has been done in the presence of gangrenous bowel with due consideration to patient's age, duration of symptoms, extent of peritonitis and shock (Kuzu 2002, Raveentharan.V 2003).

MALIGNANT LARGE BOWEL OBSTRUCTION:

In the West up to 90% of the patients suffer obstruction secondary to carcinoma. But the converse is not true. Only about 15% of large bowel malignancies present with obstruction (Philips et al 1985, Kyllonen 1987). The risk of obstruction by a colorectal malignancy varies with the site of malignancy.

In decreasing order of risk:

1. Splenic flexure – up to one half go in for obstruction (Philips et al 1985, Kyllonen 1987, Waldron and Donovan 1986).

2. The rest of the colon except the rectum – around one fifth risk.

3. Rectal carcinoma – one-tenth the risk.

In clinical practice, approximately three-fourth of all malignant large bowel obstruction cases are situated in the left colon (i.e.) at or distal to the splenic flexure (Serpell et al 1989, Sjodahl et al 1992).

DIAGNOSIS:

Is based on:

1. Clinical features: Classically abdominal pain, distension, absolute constipation and vomiting. Abdominal pain is seen in 90% of cases (Umpelby and Williamson 1984, Serpell et al 1988).

2. Plain abdominal radiography: Gaseous dilatation of the large bowel proximal to the site of obstruction and a distal cut-off.

3. Per-op findings: The proximal large bowel is dilated and edematous.

MANAGEMENT OF MALIGNANT LARGE BOWEL OBSTRUCTION:

The aim in the management of patients with malignant obstruction is to relieve the obstruction with low mortality and morbidity, to ensure adequate clearance where possible to ensure long-term survival, but also to provide good palliation in the remainder. It is now generally accepted that for obstruction proximal to the splenic flexure, resection and primary anastomosis is optimal therapy (Phillips et al 1985). An internal bypass will be justified in patients with an irresectable tumor and in high-risk patients with extensive distant spread of disease.

The controversy arises in the more common, more distal lesions. Most surgeons have been reluctant to ignore the traditional wisdom that it is unwise to anastomose dilated, edematous, unprepared bowel and so therapy has been to initially decompress the bowel (Pain and Cahill 1991). At a second operation the obstruction is resected with anastomosis and then the colostomy closed. Presently, concerns that staged tumor resection may result in a worsening of long term prognosis has had led on to increased performance of primary tumor resection.

I. METHODS OF DECOMPRESSION:

1. Laser Luminisation: Laser can be used to relieve the intraluminal obstruction, help in bowel preparation for future elective surgery or might be palliation enough for highly advanced malignancy. Any level of obstruction can be dealt with this way.

2. Trans-tumoral stents: Lesions in the rectum or sigmoid can be stented as a decompression procedure (Keen and Orsay 1992, Tejero et al 1995).

II. RESECTION AND IMMEDIATE ANASTOMOSIS:

Conceptually, the ideal management of malignant obstructive pathology would be to remove the tumor and restore bowel continuity in one sitting. However, segmental resection of left sides lesions involve anastomosis, in unprepared, dilated and edematous bowel which would give a mortality rate of up to 50% from anastomotic leakage (Irvin and Greaney 1977, Irvin and Goligher 1973).

III. RESECTION AND DELAYED ANASTOMOSIS:

The tumor is resected and the proximal bowel is brought to the surface as end colostomy, while the distal stump is closed intra abdominally (Hartmann's procedure).

DISADVANTAGES:

1. In contrast to the deaths following initial decompression, mortality here is secondary to intra abdominal sepsis (Waldron and Donovan 1986).

2. The stoma is a potential source of complications – necrosis and retraction occurs in up to 20% of patients (Stephen et al 1990, Allen-Mersh 1993).

3. Reversal of the procedure is a major task with higher morbidity and mortality (Mosdell and Doberneck 1991).

4. The same problems of disease progression and decreased long-term prognosis exist.

To minimize these risks, Per-op bowel preparation is employed:

1. On-Table Lavage: A large Foley catheter is introduced into the caecum either through an appendix stump or through the terminal ileum across the Ileo-Caecal valve. Another scavenger tube is fixed proximal to obstruction, but distal to the site of anastomosis intended. Warm saline is run in an ante grade fashion and faeces removed distally. This method is useful if faecal load is a viscous fluid.

2. Simple decompression of flatus and extrusion of solid faeces is better than lavage, if load is solid as the lavage would make the faeces fluid and difficult to manage. (Amsterdam & Krispin 1985, White & Macfie 1985, Mealy et al 1998, Dorudi et al 1990).

Using the above procedures, resection and immediate anastomosis is found to have morbidity and mortality rates at least equal to that of other procedures.

ADVANTAGES:

1. Stoma and its associated problems avoided.

2. Decreased hospital stay.

SUB TOTAL COLECTOMY:

Advantages:

1. The entire unprepared proximal bowel is removed.

2. Ileo – colic anastomosis has lesser leak rate than colo-colic anastomosis – (10% vs 18% - Philips et al 1985).

3. Obstructing carcinoma has increased risk of synchronous malignancy in proximal bowel.

Disadvantages:

1. Diarrhoea is more common.

2. Major procedure.

3. Colonic nutritional function is lost.

INDICATIONS:

1. <50 years of age.

2. Positive family history.

3. Obstructing carcinoma.

4. Caecal perforation due to back – pressure.

MATERIALS AND METHODS

This is a prospective study, which comprises of 38 patients treated for acute large bowel obstruction from August 2003 – January 2006 at Government General Hospital, Chennai-3.

The patients on admission were subjected to thorough physical examination and available investigation. They were treated with IV fluids, antibiotics, and blood transfusion when required in the pre and postoperative period and were subjected to appropriate surgical procedure.

The postoperative period was monitored for complications. After discharge an attempt was made to follow up the cases. Patients who underwent colostomy were followed till the bowel continuity was restored.

OBSERVATION

AGE AND SEX DISTRIBUTION
TABLE: 1

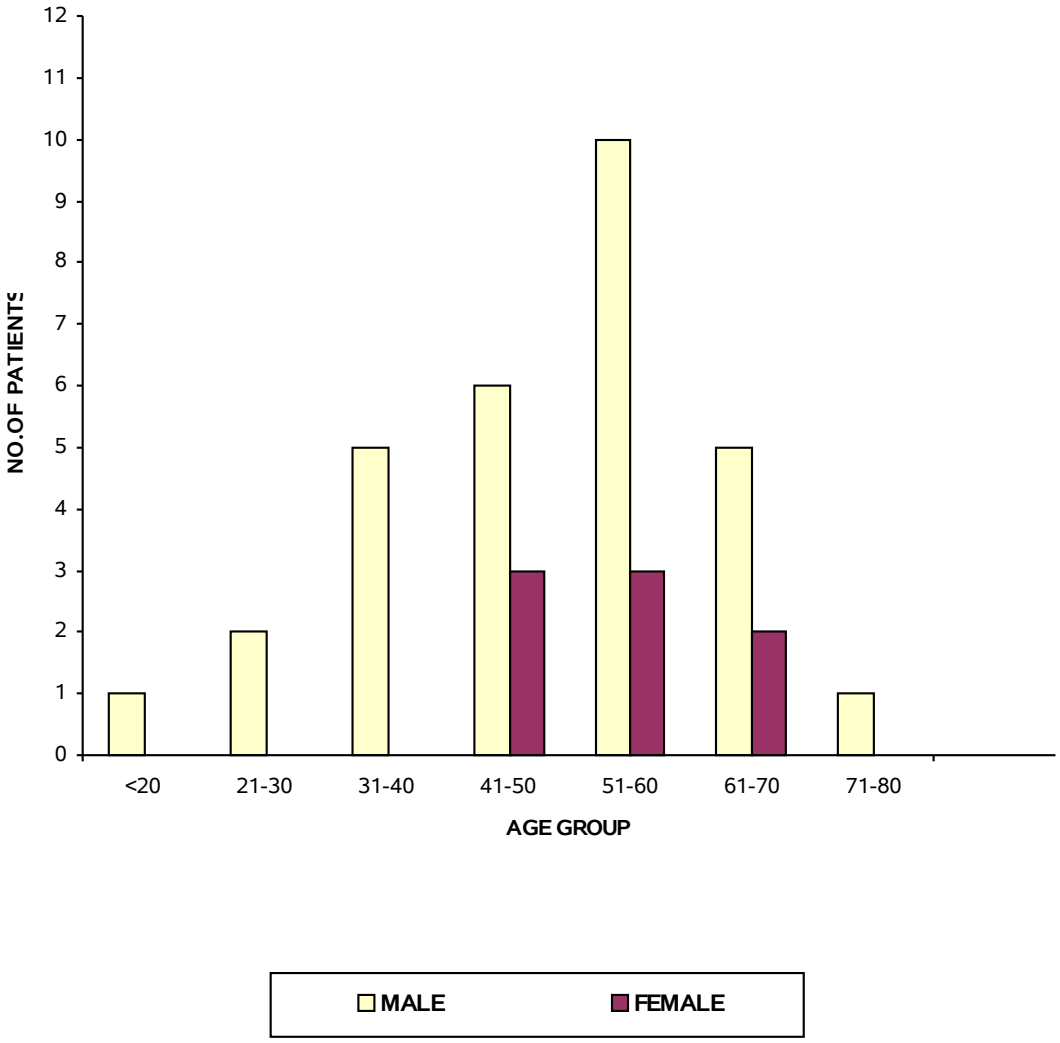
AGE GROUP *(YRS)*	***MALE***	***FEMALE***	***PERCENTAGE***
<20	1	-	2.5
21-30	2	-	5
31-40	5	-	13
41-50	6	3	23.6
51-60	10	3	34
61-70	5	2	18.4
71-80	1	-	2.5
TOTAL	30	8	-

Of the 38 cases 30 were males and 8 were females.

Male: Female = 3.75:1

Mean age is 50.1.

AGE AND SEX DISTRIBUTION



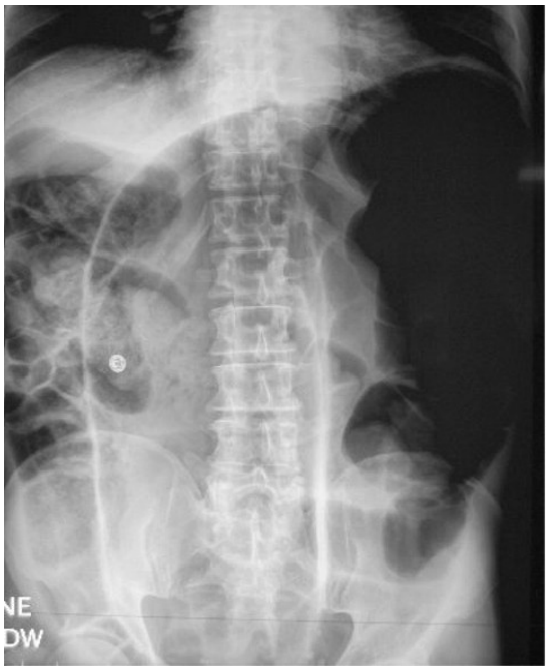
FREQUENCY OF SYMPTOMS AND SIGNS
TABLE: 2

SYMPTOMS AND SIGNS	NO.OF CASES	PERCENTAGE
Pain	34	90%
Abdominal Distension	36	95%
Constipation	28	75%
Vomiting	9	23%
Peritonitis	4	10.5%
Fever	4	10.5%

In our study abdominal distension was the most common presenting feature (95%).

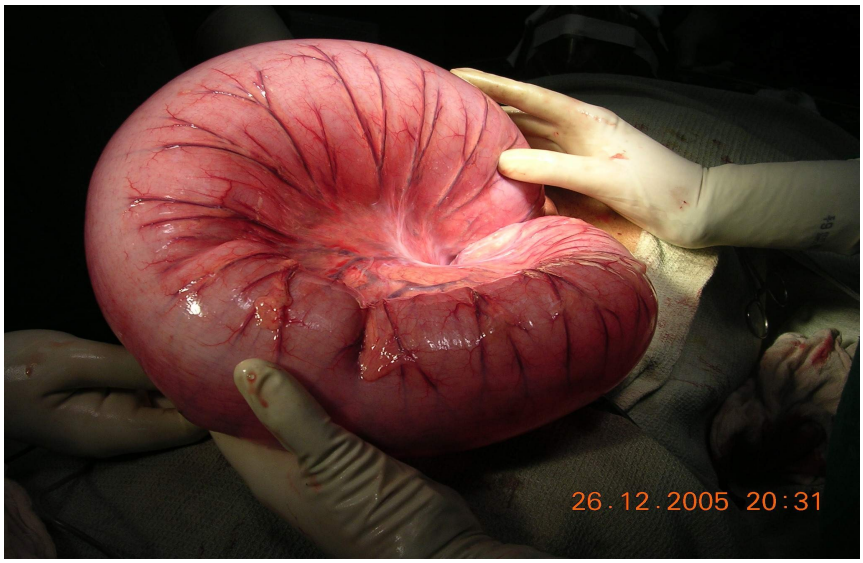
PLAIN X-RAY FEATURES OF
ACUTE LARGE BOWEL OBSTRUCTION
TABLE: 3

X-RAY FINDING	NO.OF CASES	*Percentage*
Bent inner tube sign	15	75%
Distended colon with irregularly spaced haustral folds	4	10%



COFFEE BEAN SIGN

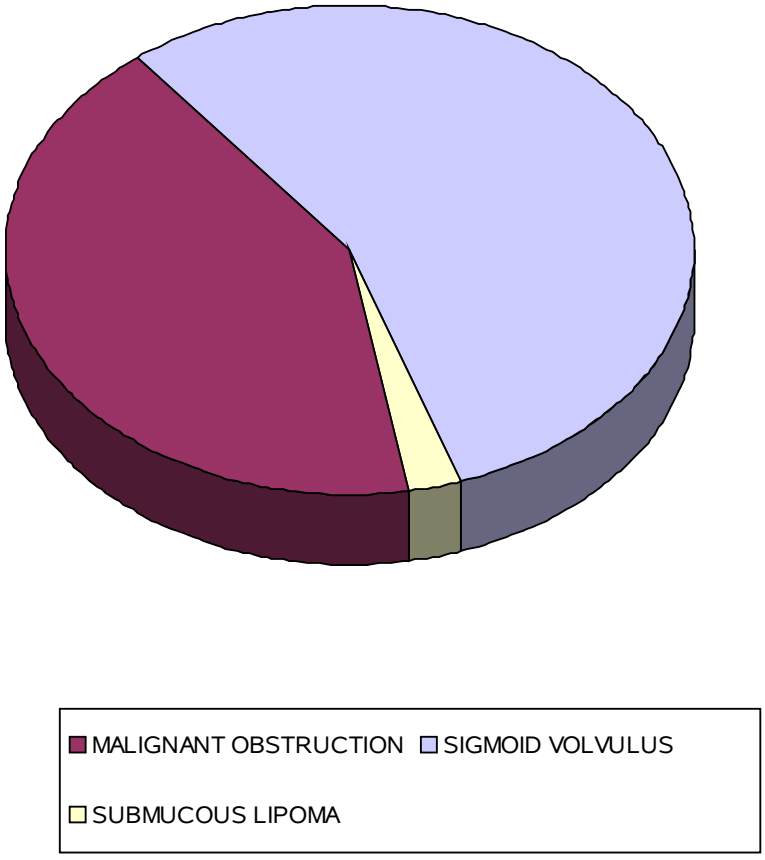
BENT INNER TUBE SIGN



SIGMOID VOLVULUS

SIGMOID VOLVULUS -VIABLE BOWEL

ETIOLOGY


MALIGNANT OBSTRUCTION
SIGMOID VOLVULUS
SUBMUCOUS LIPOMA

SIGMOID VOLVULUS – GANGRENOUS BOWEL

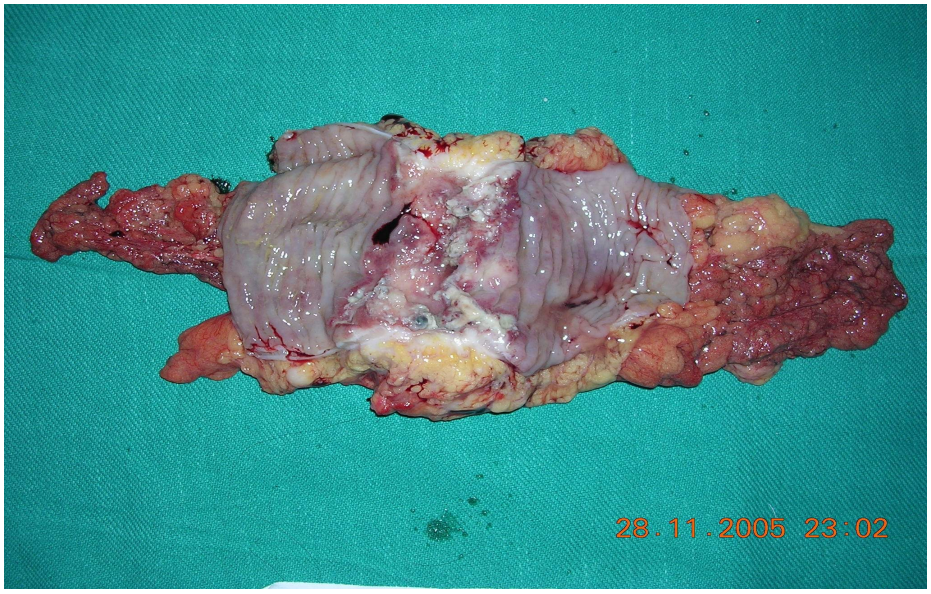
SIGMOID RESECTION AND ANASTOMOSIS

ETIOLOGY:
TABLE: 4

ETIOLOGY	NO.OF CASES
MALIGNANT OBSTRUCTION	15
SIGMOID VOLVULUS	22
SUBMUCOUS LIPOMA	1

In our study non-malignant causes account for 60.5% of cases of acute large bowel obstruction.

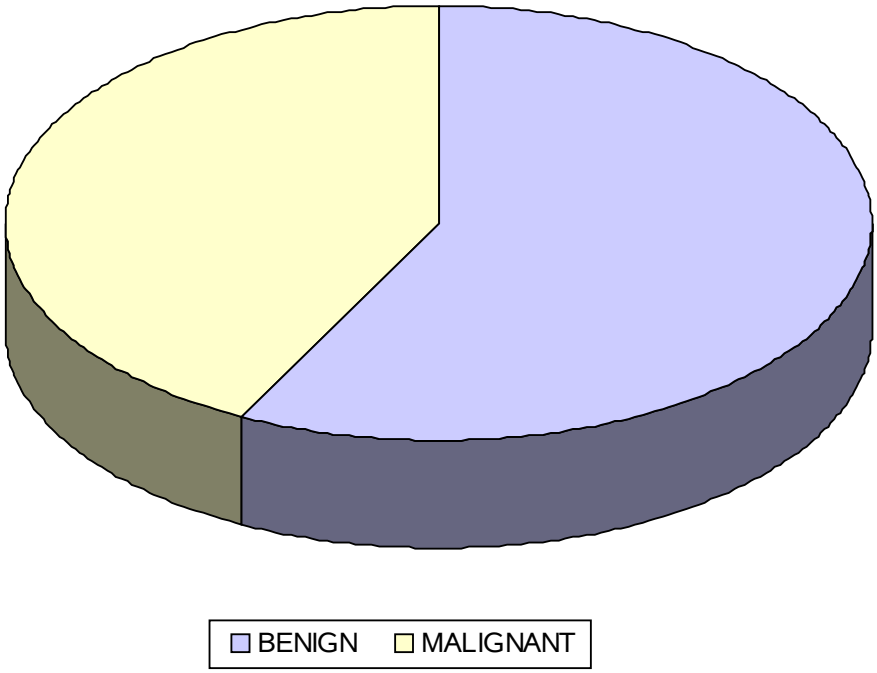
SIGMOID VOLVULUS – RESECTED SPECIMEN



TRANSVERSE COLON GROWTH

NATURE OF OBSTRUCTION
TABLE: 5

BENIGN	23
MALIGNANT	15



Sigmoid volvulus and one case of submucous lipoma out number the malignant causes in our study.

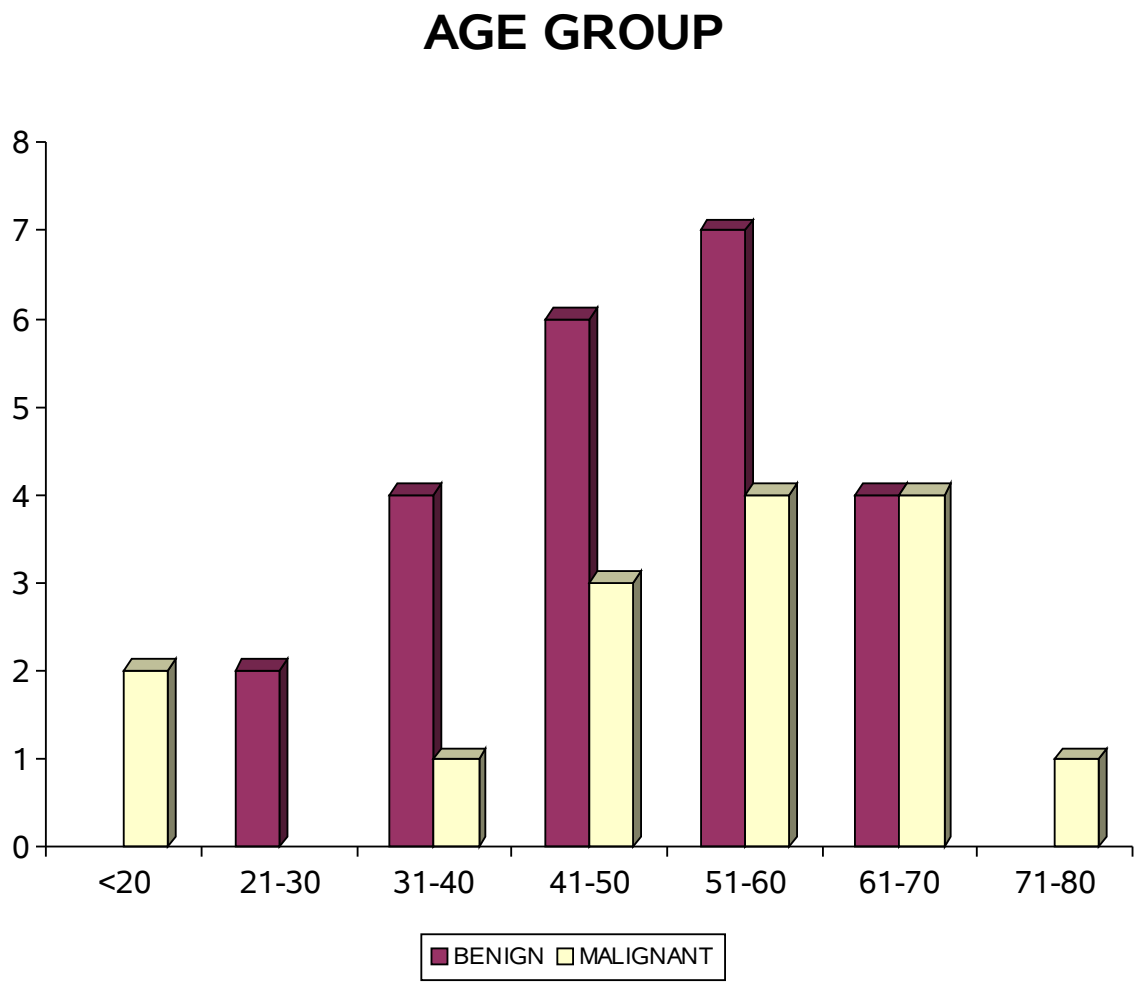

Prof. P3V Unit
Ms Baroja 70/F
07.07.2004 09:10

SIGMOID COLON GROWTH

AGE GROUP:
TABLE: 6

	<20	**21-30**	**31-40**	**41-50**	**51-60**	**61-70**	**71-80**
BENIGN	-	2	4	6	7	4	-
MALIGNANT	2	-	1	3	4	4	1

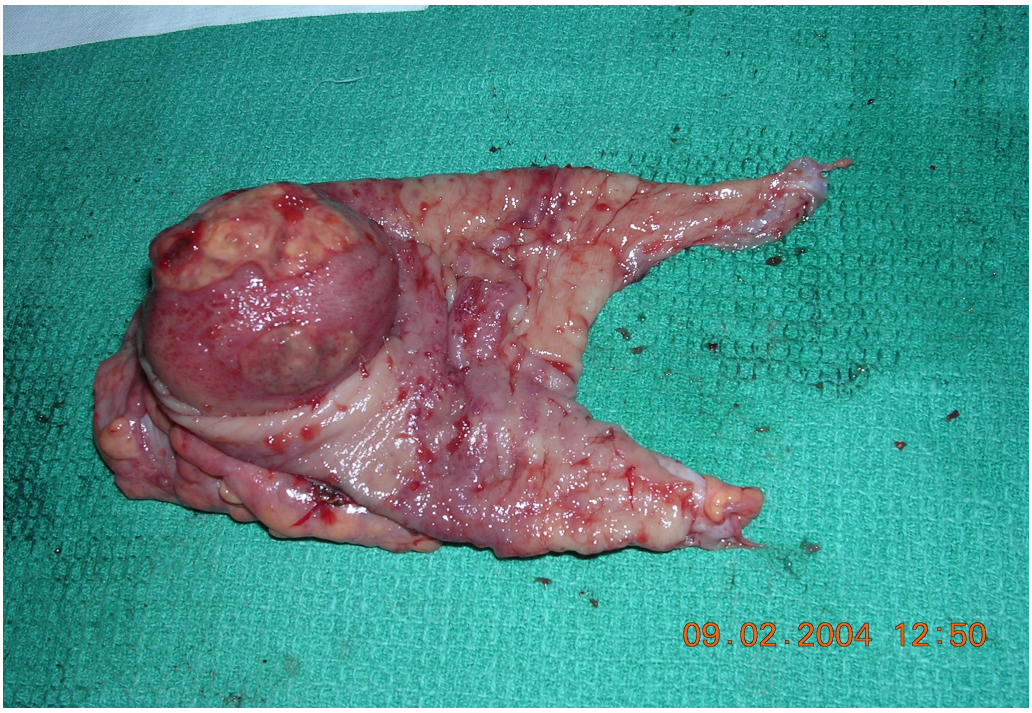
The most common benign cause of obstruction is sigmoid volvulus. This occurred a decade earlier when compared to the literature (Arnold and Nance, 1973; Anderson and Lee, 1981; Ballantyne et al, 1985; Gibney 1991).


AGE GROUP
8
7
6
5
4
3
2
1
0
<20
21-30
31-40
41-50
51-60
61-70
71-80
BENIGN
MALIGNANT

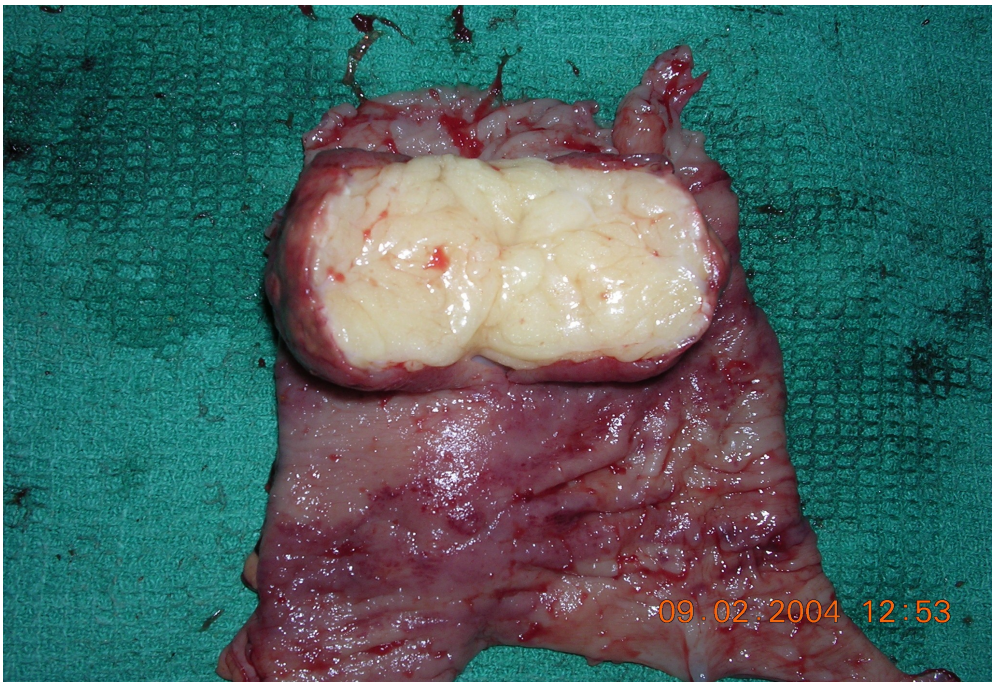
SITE OF OBSTRUCTION (MALIGNANT):
TABLE: 7

CAECUM	1
ASCENDING COLON	2
TRANSVERSE COLON	3
DESCENDING COLON	-
SIGMOID	4
RECTUM	5

In our study, the site of malignant obstruction is more common on the left side.

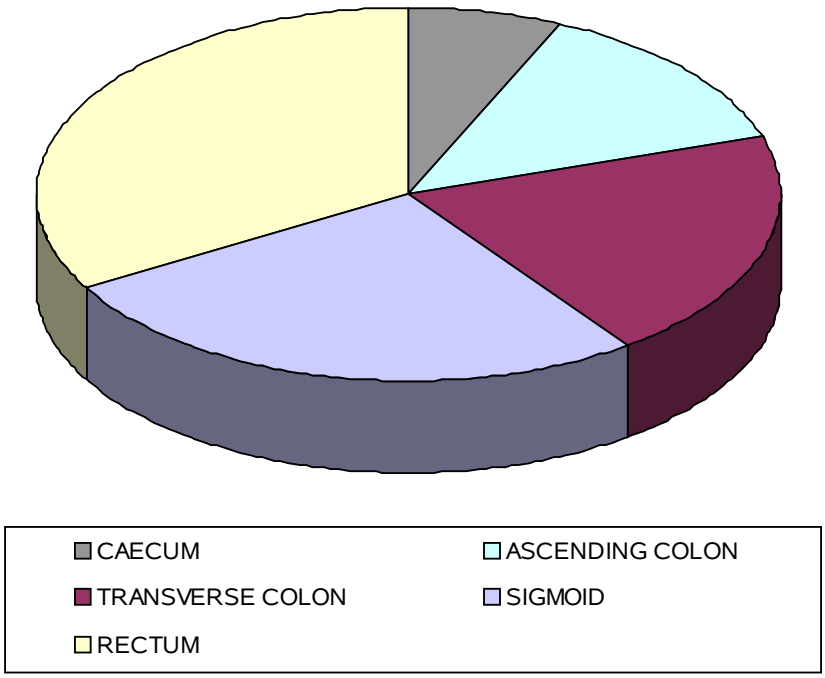


SUBMUCOUS LIPOMA - SIGMOID COLON



CUT-OPEN SPECIMEN - SUBMUCOUS LIPOMA IN SIGMOID COLON

SITE OF OBSTRUCTION (MALIGNANT)



OPERATIVE PROCEDURES:
TABLE: 8

PROCEDURE	NO.OF CASES	PERCENTAGE
RESECTION AND ANASTOMOSIS WITHOUT DEFUNCTIONING COLOSTOMY	31	81.5%
RESECTION AND ANASTOMOSIS WITH DEFUNCTIONING COLOSTOMY	1	2.6%
HARTMANN'S PROCEDURE	1	2.6%
DECOMPRESSION COLOSTOMY	5	13%

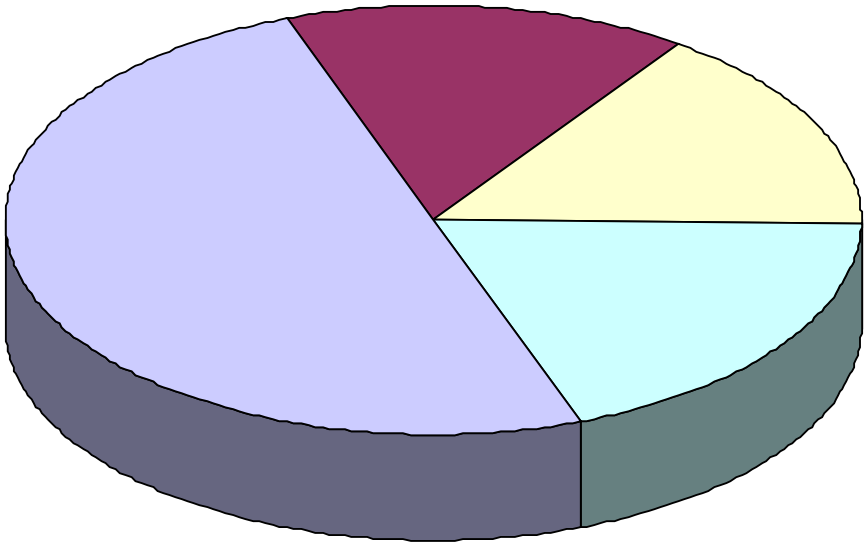
COMPLICATIONS:
TABLE: 9

Wound infection was the most common complication, which occurred in thirteen patients. They were treated with appropriate antibiotics. Four of them were subjected for secondary suturing.

WOUND INFECTION	13
PULMONARY INFECTION	4
ANASTOMOTIC LEAK	4
DEATH	5

Anastomotic leak occurred in four patients and were managed conservatively. One patient who was on treatment for Parkinsonism with sigmoid volvulus died in the postoperative period due to medical complication. All the other deaths occurred in the malignant patients due to factors such as advanced disease and late presentation.

COMPLICATIONS



DISCUSSION

In this study of 38 cases of acute large bowel obstruction, the mean age of presentation was 50.1 years. This is slightly on the lower side, when compared to the relevant literature where it is 64 years (Maingot 10th ed). Moreover almost same frequency in sex incidence occur according to the same studies earlier but here, almost three-fourth of the cases are male.

Abdominal distension was the most common presenting feature (95%), which is correlating with the earlier studies on this (Anderson 1991, 92.5%, Ballantyne 1982, 92.5%, Kell 1990, 95.3%).

Sigmoid volvulus was the single most common condition (57.8%), which was responsible for the obstruction. This was mainly due to the increased incidence found in this part of the world (Gill and Eggleston, 1965;Basu and Misra 1991). Volvulus was common as usual as in the 6th decade. Twenty out of Twenty two patients underwent primary resection and anastomosis. One patient who had gangrenous bowel underwent primary resection and anastomosis with proximal transverse loop colostomy, which was closed later. Another patient who had gangrenous bowel underwent Hartmann's procedure

and definitive surgery later. One death occurred due to associated medical illness along with Parkinsonism.

One case was submucous lipoma of the sigmoid colon, which presented as colo-colic intusucception for which primary resection and anastomosis was done.

Malignant conditions accounted for 15 cases out of 38 (39.4%). Recto sigmoid growth is the most common site. This correlates well with the earlier studies on this. Obstruction is more likely to occur with the neoplasms of the left colon as they are of stenotic variety (Goligher and Smiddy, 1957).

Definitive procedures such as Hemicolectomy, Segmental resection and anastomosis were done in three-fourth of the cases. Decompression procedures such as Transverse loop colostomy and sigmoid loop colostomy were done in the rest followed by definitive treatment at a later date.

Three deaths occurred mainly due to preoperative cachexia, late presentation and sepsis.

CONCLUSION

In this series of 38 patients with the diagnosis of acute large bowel obstruction the following are the conclusion:

- Men out number the Women with the male: female ratio (3.75:1).
- The age ranged from 14-75 (mean 50.1 years) with the majority of them in the 51- 60 age group.
- Abdominal distension was the most common symptom.
- Sigmoid volvulus was the single most common condition, which accounted for 57.8% of the total.
- Among malignant obstruction recto sigmoid growth was the common cause.
- Primary resection and anastomosis was done in most of the conditions.
- Decompression procedures were done in cases that presented late with advanced disease thereby adding to the mortality.
- Wound infection was the commonest postoperative complications.

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No.	NAME	AGE/ SEX	IP.NO	PAIN	VOMITINGNAUSEA/	CONSTIPATION	DISTENSION	TENDERNESS	FEVER	PERITONITIS	DIAGNOSIS	VIABLE BOWEL	GANGRENOUS BOWEL	RA WITHOUT DEFUNCTIONING COLOSTOMY	RA WITH DEFUNCTIONING COLOSTOMY	HARTMANN'S PROCEDURE	COLOSTOMYDECOMPRESSION
1.	KUMAR	40/M	615874	+		+	+				SIGMOID VOLVULUS	+		+			
2.	SUBRAMANI	75/M	627158	+		+	+				SIGMOID GROWTH			+			
3.	SURESH	34/M	628512	+		+	+				SIGMOID VOLVULUS	+		+			
4.	PALANIAPPAN	14/M	612851	+		+	+				RECTAL CA						+
5.	DHANAMMAL	60/F	638517	+		+	+				RECTOVAGINAL FISTULA						+
6.	MANICKAM	28/M	639542	+		+	+				SIGMOID VOLVULUS	+		+			
7.	KRISHNAN	50/M	779693	+							RECTAL CA						+
8.	SUNDARAMURTHY	60/M	776558			+	+				CA.CAECUM			+			
9.	ALLIMUTHU	50/F	734281	+		+	+				SIGMOID VOLVULUS		+		+		
10.	RAGHU	29/M	694282	+		+	+				SUBMUCOUS LIPOMA	+		+			
11.	CHANDRA IYER	45/M	762927	+		+	+				CA.ASCENDING COLON			+			
12.	SAROJA	61/F	684986	+		+	+				SIGMOID GROWTH			+			
13.	PERUMAL	54/M	684534	+		+	+				SIGMOID VOLVULUS		+	+			
14.	RAJAMMAL	48/F	701585	+		+	+				SIGMOID VOLVULUS	+		+			
15.	VENKATESAN	63/M	694597	+		+	+				TRANSVERSE COLON			+			

										GROWTH						

No.	NAME	AGE/ SEX	IP.NO	PAIN	VOMITING NAUSEA/	CONSTIPATION	DISTENSION	TENDERNESS	FEVER	PERITONITIS	DIAGNOSIS	VIABLE BOWEL	GANGRENOUS BOWEL	RA WITHOUT DEFUNCTIONING COLOSTOMY	RA WITH DEFUNCTIONING COLOSTOMY	HARTMANN'S PROCEDURE	DECOMPRESSION COLOSTOMY
1.	BALAJI	35/M	714589	+		+	+				SIGMOID VOLVULUS	+		+			
2.	EZHUMALAI	47/M	704583	+		+	+				SIGMOID VOLVULUS		+	+			
3.	AMSA	64/F	674210	+	+	+	+				TRANSVERSE COLON GROWTH	+		+			
4.	CHINNATHAMBI	64/M	654351	+	+	+	+				SIGMOID VOLVULUS		+			+	
5.	KANAGAVALLI	47/F	645948	+		+	+				SIGMOID VOLVULUS	+		+			
6.	IYYANAR	69/M	704586	+	+	+	+				SIGMOID VOLVULUS	+		+			
7.	DHANALAKSHMI	59/F	714596	+		+	+				RECTAL CA						+
8.	NARASIMAN	69/M	705148	+		+	+	+			SIGMOID VOLVULUS		+	+			
9.	KALA	64/F	724988	+		+		+			TRANSVERSE COLON GROWTH	+		+			
10.	NAGABOOSHANAM	53/F	674296	+	+	+	+				SIGMOID VOLVULUS	+		+			
11.	YESUPATHAM	49/M	684923	+		+	+			+	SIGMOID CA			+			
12.	PONNAMMAL	63/F	697419	+		+	+				SIGMOID VOLVULUS	+		+			
13.	MOHAMMED	45/M	714289	+	+	+	+				SIGMOID VOLVULUS		+	+			
14.	CHINNATHAMBI	57/M	679716	+		+	+				SIGMOID VOLVULUS	+		+			
15.	MATHIAZHAGAN	35/M	724216	+		+	+	+			CA ASCENDING COLON	+		+			

No.	NAME	AGE/ SEX	IP.NO	PAIN	VOMITINGNAUSEA/	CONSTIPATION	DISTENSION	TENDERNESS	FEVER	PERITONITIS	DIAGNOSIS	VIABLE BOWEL	GANGRENOUS BOWEL	COLOSTOMYRA WITHOUT DEFUNCTIONING	RA WITH DEFUNCTIONING COLOSTOMY	HARTMANN'S PROCEDURE	DECOMPRESSION COLOSTOMY
16.	SURESH	20/M	693528	+	+	+	+	+			RECTAL CA						+
17.	CHINNATHAI	53/F	654921	+		+	+				SIGMOID VOLVULUS	+		+			
18.	GOVINDAMMAL	54/F	664129	+	+	+	+	+			SIGMOID CA	+		+			
19.	SHANMUGAM	56/M	764219	+		+	+				SIGMOID VOLVULUS	+		+			
20.	JOTHIMANI	36/M	721738	+		+	+	+			SIGMOID VOLVULUS		+	+			
21.	ALWAR	44/M	681920	+		+	+				SIGMOID VOLVULUS	+		+			
22.	NAGARAJAN	59/M	691740	+		+	+				SIGMOID VOLVULUS	+		+			
23.	SELVA	57/M	785810	+		+	+				SIGMOID VOLVULUS	+		+			